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ABSTRACT

Cryotherapy (the use of ice and exercise to rehabilitate athletic injuries) can be an effective method of treating baseball injuries. It is generally agreed that ice is appropriate for the first 24 to 48 hours, but there is disagreement over its use beyond 72 hours. Some physicians and trainers support the use of heat with either exercise or rest, believing that this increases the effectiveness of the healing process and reduces the time involved. Due to the way that muscles heal, however, and the characteristics of collagen (a protein crucial to the healing process), cryotherapy can be a more effective treatment, reducing the healing time and the risk of reinjury. Ice can be applied either with an ice bag, an ice massage, or an ice water submergence. If pain or swelling persists beyond 72 hours, the advice of a physician should be sought. (DC)

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THE USE OF ICE IN BASEBALL INJURIES (CRYOTHERAPY)

Now that we are into baseball season everyone's aches and pains, for whatever reason, come into focus. Whether your pain is the result of overactivity after a winter of hibernation or you are a Class "A" pitcher with a rotator cuff impingement syndrome, cryotherapy can assist in returning you to maximum performance.

WHAT IS CRYOTHERAPY?

Cryotherapy is the use of ice and exercise to rehabilitate an athletic injury. In utilizing this approach we attempt to ascertain the following goals: to decrease pain, remove injury debris, prevent muscle atrophy or wasting, to normalize scar tissue formation and to return the athlete to normal strength and movement.

Most physicians and trainers agree that the use of ice is appropriate in treating athletic injury for the first 24-48 hours to decrease swelling and pain. However, there is some controversy over the effectiveness of heat vs. ice after 72 hours post trauma at which time pain and swelling have decreased considerably.

Those who support the utilization of heat believe it increases tissue metabolism leading to decreased healing time and reabsorbs the traumatic hematoma, thus preventing adhesion formation and decreases movement in the involved extremity. However, those who utilize ice with exercise can return athletes to activity much faster and with less chance for reinjury.

WHY?

In the subacute stage of injury (pain with rest, pain at the endrange of movement) there is always some degree of muscle, tendon, or ligament healing occurring as a result of microscopic tearing and bleeding of tissue. The major constituent of the scar tissue healing is a protein known as collagen. Under normal conditions, collagen exhibits elasticity. However, with injury collagen exhibits viscous properties leading to plastic deformation. When a muscle is loaded collagen scar will deform but when unloaded it will not return to its normal length. This poses a problem because scar tissue, which is poorly vascularized, is stretched out. Then, when an athlete exercises lactic acid, which is built up in the muscle as a normal byproduct, starts to irritate nerve endings leading

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to a dull aching pain. This pain is due to the fact a decompensated blood supply would not remove these waste products.

With heat application and exercise collagen exhibits viscous properties and the aforementioned problem exists. Utilizing heat with rest does not solve the healing problem because collagen is laid down in a haphazard arrangement when no stress is imposed on a muscle. Thus with abnormal scar formation, the athlete has a greater chance for reinjury. The use of ice with exercise or cryotherapy performs four functions: First, it cools down collagen so that elasticity is retained when stress is imposed with muscle contractions Secondly, it allows you to exercise the muscle, causing the collagen formation to link up parallel with muscle fibers. Ice applied also is effective in decreasing pain since it slows down the nerve conduction of pain fibers in the injured tissues. Finally, cryotherapy increases tissue metabolism greater than heat alone, leading to decreased healing time. Obviously the use of ice can enhance healing faster by allowing sooner activity, with less pain and promoting the normal formation of scar tissue with less chance for reinjury.

One may utilize ice in any of the following three ways:

1) Ice Bag - This type of application should take approximately 20 minutes. Make sure to surround the entire area of pain with as many ice bags as necessary.
2) Ice Massage - This is achieved by simply rubbing ice directly over the area of pain for 7-10 minutes. We suggest the use of an ice cup for best results.
3) Ice Water Submergence - The water should be approximately 55°F. One simply submerges the injured area into the ice bath for approximately 20 minutes to achieve the best results.

It is suggested that one seek the advice of a physician if pain or swelling persists longer than 72 hours.

If you have any questions, comments or suggestions regarding this article or any facet of sports medicine, write to the Institute for Medicine in Sports, P.O. Box 2621, Hamilton Square, NJ 08690 or phone (609) 586 4277. If you wish to make an appointment for physicians' clinic, sports rehab/physical therapy, cardio pulmonary rehab or a consultation regarding conditioning, nutrition and/or prevention call (609) 586-7900 ext. 6677.